



HILL ENVIRONMENTAL GROUP, INC.
Environmental & Engineering Services

SDMS Document



93329

September 22, 2003

Mr. Bruce Amig
Goodrich Corporation
Four Coliseum Center
2730 West Tyvola Rd.
Charlotte NC 28217-4578

Subject: Groundwater Quality Evaluation
Chemical Waste Management Site, Newark NJ
Former Hilton Davis Site, Newark, NJ

What about this other site?

Dear Mr. Amig:

During our May 21, 2003 meeting with the New Jersey Department of Environmental Protection (NJDEP) concerning groundwater quality issues at the former Hilton Davis (HD) site in Newark, it was agreed that a review should be performed of documents pertaining to groundwater conditions at the adjacent Chemical Waste Management (CWM) Site to determine if any groundwater contamination detected at the CWM site were negatively impacting the groundwater quality at the former Hilton Davis site. Therefore, on behalf of Goodrich Corporation, Hill Environmental Group, Inc. (HILL) has reviewed the following document:

Remedial Action Work Plan (RAWP)
Chemical Waste Management of New Jersey – Newark Facility
GeoTrans, Inc.
November 6, 2002

The attached Figure 1 (based on a City of Newark tax map) shows the former HD property (Lot 56) and the CWM property (Lots 19 and 31), and their relationship to the Passaic River, Lister Avenue, and surrounding properties.

Data from the RAWP were compared with January 2003 groundwater sampling data for the HD site, presented in the HILL April 2003 Groundwater Sampling Data report.

It was found that shallow groundwater from the CWM site flows onto portions of the HD site, impacting groundwater quality at the HD site.

Groundwater Flow

The CWM RAWP contains a series of maps showing concentrations of various constituents detected in shallow groundwater samples. The base map contains shallow groundwater contours, generated based on water level measurements taken on September 9, 2002. An example of these maps (Figure 2.1 showing benzene concentrations) is attached.

HILL developed a water table (i.e., shallow groundwater) contour map for the HD site based on measurements taken on January 21 and 22, 2003 (Figure 3). This HD map was compared to the CWM shallow groundwater contour map based on the September 9, 2002 data.

Although the water level measurements at the two sites were taken on different dates, the two maps are quite consistent. When appropriately scaled and superimposed, it was discovered that with only minor adjustments, a shallow groundwater contour map could be developed that combines the two data sets (Figure 4). (Note that because the focus of this evaluation is on potential impacts to the HD site, only the groundwater contours and well locations from the eastern portion of the CWM site (i.e. Lot 31) are shown on Figure 4.)

As can be seen by examination of Figures 2.1, 3 and 4, the contours on the combined map are consistent from the CWM site to the HD site, both in terms of groundwater elevations as well as orientation.

Figure 4 also shows that shallow groundwater from the northeastern portion of the CWM site (the northern portion of Lot 31) flows in a northwesterly direction onto the HD site.

Groundwater Quality Impacts

Based on the January 2003 sampling results at the HD site, several organic constituents are present in HD site groundwater at concentrations above NJDEP Class IIa groundwater quality criteria. These organic constituents were compared to those found in groundwater at the CWM site. Based on this comparison, it was determined that the following constituents detected in groundwater at the CWM site could be impacting groundwater quality at the HD site:

- Benzene
- Chlorobenzene
- 1,4-Dichlorobenzene
- Semi-Volatile Organics - Tentatively Identified Compounds

For each of the above constituents, a map was prepared showing posted constituent concentrations superimposed onto the combined shallow groundwater contours (Figures 5 through 8). For each map, CWM data are from the November 6, 2002 GeoTrans, Inc. report (for samples collected in August 2002); and HD site data are from the April 2003 Groundwater Sampling Data report (for samples collected in January 2003).

Benzene and Chlorobenzene

Because the occurrence of benzene and chlorobenzene on both the CWM site and the HD site are similar, they will be considered together. Figure 5 shows posted benzene concentrations and Figure 6 shows posted chlorobenzene concentrations.

It is highly likely that benzene and chlorobenzene concentrations in HD monitoring wells MW-6 and MW-8 (as well as the lower concentrations in MW-3) are associated with the high benzene and chlorobenzene detections in upgradient CWM monitoring points. This conclusion is based on the fact that the groundwater in an area on the CWM site with



high benzene and chlorobenzene concentrations (i.e., the vicinity of CWM monitoring points MW-4, GP-1 and GP-2) flows downgradient towards the vicinity of MW-6 and MW-8 on the HD site, a distance of less than 100 feet.

HD monitoring wells MW-2 and MW-3 (which contain concentrations of benzene and chlorobenzene above NJDEP Class IIa aquifer criteria) are not directly downgradient from the CWM site. However, it is possible that local variations in groundwater flow may be present (and/or that groundwater flow directions may change somewhat through time). Therefore, it is possible that the detections of benzene and chlorobenzene in MW-2 and MW-3 are also associated with detections at the CWM site. (Note: Goodrich is pursuing the installation of a monitoring well upgradient from MW-2 on the Benjamin Moore property. Data from this well will clarify the source of the MW-2 detections.)

Note that neither benzene nor chlorobenzene were associated with operations at the former HD site; and further, that the benzene and chlorobenzene detections in the groundwater at the HD site can be fully attributed to one or more off-site sources.

1,4-Dichlorobenzene

Figure 7 shows posted 1,4-dichlorobenzene (1,4-DCB) concentrations. The only HD site monitoring well with 1,4-DCB above standards is MW-6 (94.2 µg/l). Note that on the CWM site, only GP-10 has a 1,4-DCB detection (160 µg/l); however, other results show high detection limits (especially when compared to the 94.2 µg/l in MW-6).

It is likely that 1,4-DCB in HD monitoring well MW-6 is associated with groundwater from the CWM site, considering:

- The ratio of chlorobenzene to 1,4-DCB in CWM monitoring point GP-10 is 10:1 (1600 µg/l to 160 µg/l); the ratio of chlorobenzene to 1,4-DCB in HD monitoring well MW-6 is approximately 10:1 (991 µg/l to 94.2 µg/l).
- Chlorobenzene and 1,4-DCB are related compounds, i.e., reasonably expected to occur together.
- Because of extremely high concentrations of chlorobenzene detected in CWM monitoring points GP-1 and GP-2, high detection limits for 1,4-DCB are present for these monitoring points. Although 1,4-DCB is listed as not detected, it is likely that concentrations of 1,4-DCB are present, but below detection limits. (Presuming the 10:1 ratio discussed above, the 1,4-DCB would be just below detection limits at GP-1 and GP-2).

Note that 1-4 DCB is not associated with operations at the former HD site; and further, that the 1-4 DCB detections in the groundwater at the HD site can be fully attributed to one or more off-site sources.

Semi-Volatile Organics - Tentatively Identified Compounds (SVOC TICs)

Figure 8 shows posted concentrations of SVOC TICs. It is highly likely that the concentration of SVOC TICs in HD monitoring well MW-6 is associated with SVOC TICs detected in CWM monitoring points. It is possible that concentrations of SVOC TICs detected in other HD monitoring wells are also associated with the CWM detections.



Although SVOCs were historically utilized at the HD site, the SVOC TIC detections in the groundwater at the HD site can be fully attributed to one or more off-site sources.

Summary of Conclusions

Shallow Groundwater Flow

Based on an analysis of shallow groundwater elevations at both the CWM site and the HD site, it was determined that shallow groundwater from the northeastern portion of the CWM site (the northern portion of Lot 31) flows in a northwesterly direction onto the HD site (Figure 4).

Groundwater Quality Impacts

It is likely that several constituents detected at concentrations above NJDEP Class IIa groundwater quality criteria at the HD site have been impacted by groundwater quality at the upgradient CWM site. These constituents are:

- Benzene,
- Chlorobenzene,
- 1,4-Dichlorobenzene, and
- Semi-Volatile Organics - Tentatively Identified Compounds

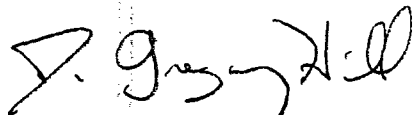
Benzene, chlorobenzene and 1,4-dichlorobenzene are not associated with operations at the former HD site and the detections of these compounds at the HD site can be fully attributed to one or more off-site sources.

Although SVOCs were historically utilized at the HD site, the SVOC TIC detections in the groundwater at the HD site can be fully attributed to one or more off-site sources.

Please feel free to give me a call if you need anything further.

Very Truly Yours,

HILL ENVIRONMENTAL GROUP, INC.



J. Gregory Hill, P.E., P.G.
Technical Director

c: Gail Helfrick, Quantum

no!

933290005

PASSAIC RIVER



LOT 59

LOT 57
N/F DIAMOND SHAMROCK

LOT 56
N/F HILTON DAVIS

LOT 34
N/F BENJAMIN MOORE

LOT 40

LOT 14

LOT 19

LOT 31

N/F CHEMICAL WASTE MANAGEMENT

LISTER

AVENUE

GRAPHIC SCALE



(IN FEET)
1 inch = 100 ft.

REFERENCE PLANS:

1. PLAN ENTITLED "Figure 1 Monitoring Well Location Map, Hilton-Davis ISRA Site, Newark, New Jersey." Prepared by PMC Environmental, Dated 08/30/01.
2. TAX MAP: City of Newark, New Jersey Tax Map.

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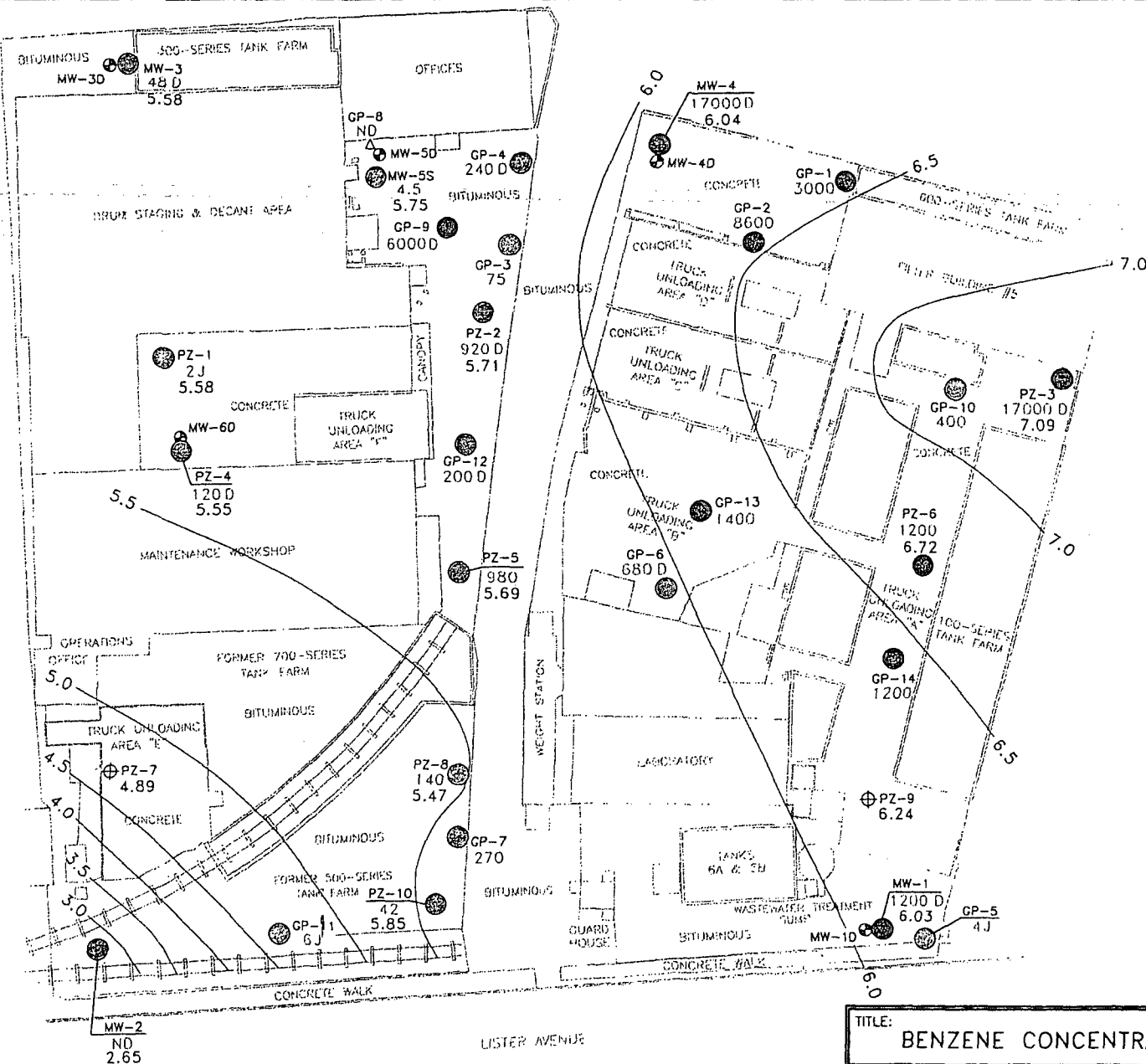
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Date: 09/05/03
Last Revised: 09/22/03
Scale: 1"=100'
Drawn By: MAS
Project No: 417-01-01

SITE LOCATION MAP
HILTON-DAVIS/CHEM WASTE MANAGEMENT
CITY OF NEWARK
ESSEX COUNTY, NEW JERSEY

FIGURE

1

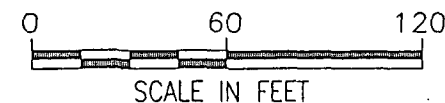


LEGEND

- PZ-6 WELL ID
- 1200 BENZENE CONCENTRATION (ug/L)
- 6.72 WATER LEVEL ELEVATION MEASURED ON 9/3/02
- <1000 ug/L
- >1000 ug/L

NOTES:

1. DATA FROM ADDITIONAL RI AND RASR REPORT. GP-1 THROUGH GP-14, PZ-1, PZ-3.
2. DATA FROM RAWP SAMPLING EVENT MW-1 THROUGH MW-6, PZ-2, PZ-4, PZ-5, PZ-6, PZ-8, PZ-10.



TITLE: BENZENE CONCENTRATIONS IN SHALLOW GROUNDWATER

LOCATION: CWM-NJM, Newark, New Jersey

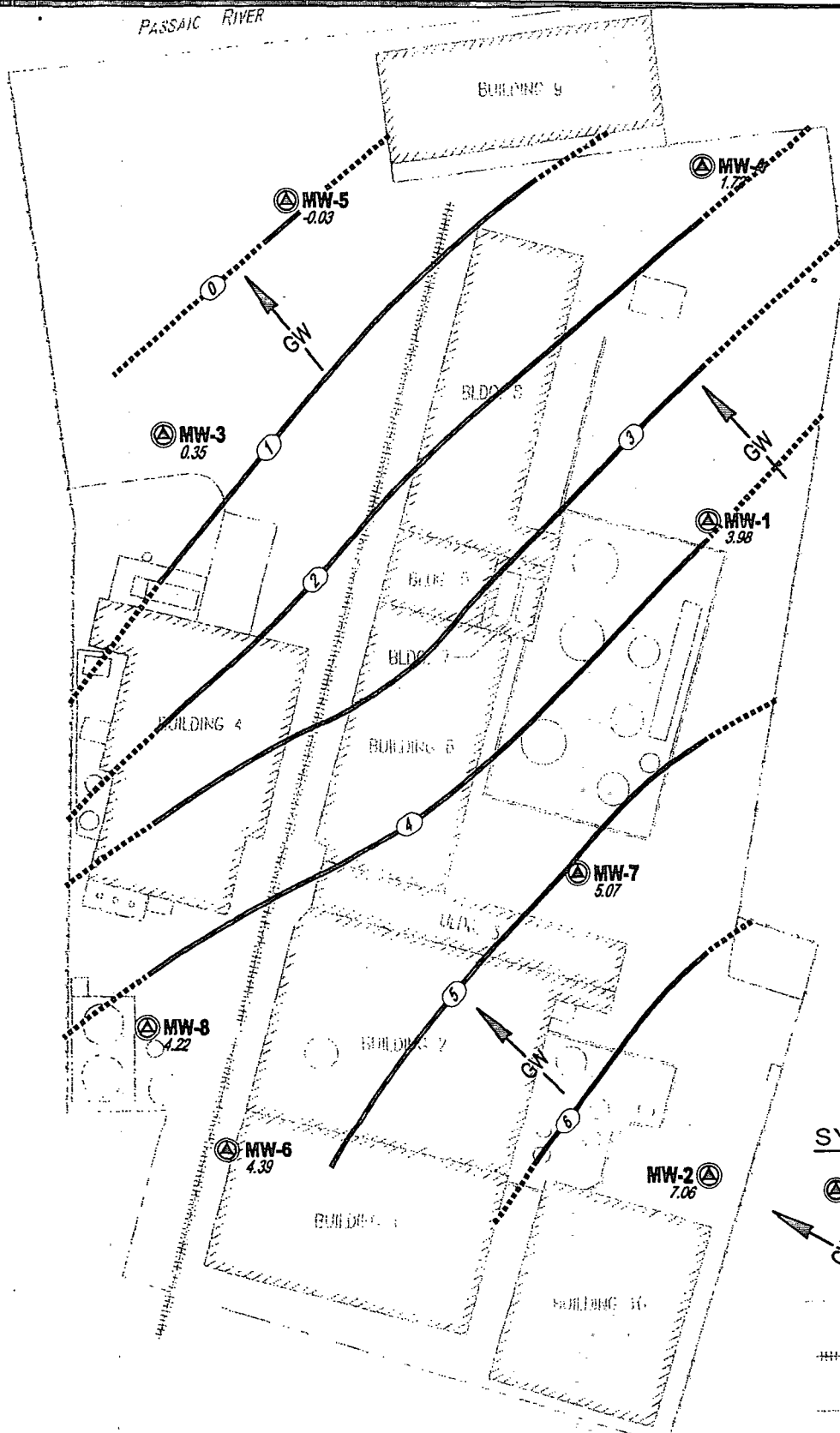
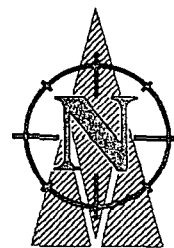


Geotrans, Inc.
A TETRA TECH COMPANY

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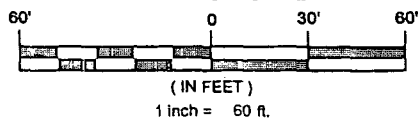
PASSAIC RIVER



SYMBOL LEGEND

- Monitoring Well Location
- Approximate Direction of Groundwater Flow
- Property Line
- Railroad
- Fence

GRAPHIC SCALE



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WATER TABLE CONTOUR MAP
HILTON-DAVIS/CHEM WASTE MANAGEMENT
CITY OF NEWARK
ESSEX COUNTY, NEW JERSEY

FIGURE
3

REFERENCE PLANS:

1. PLAN ENTITLED "Figure 1 Monitoring Well Location Map, Hilton-Davis ISRA Site, Newark, New Jersey." Prepared by PMC Environmental, Dated 08/30/01.

933290007



PASSAIC RIVER

BUILDING 9

LOT 56
N/F HILTON DAVIS

MW-5

MW-4

MW-3

MW-1

LOT 57
N/F DIAMOND SHAMROCK

BUILDING 4

BUILDING 5

MW-7

LOT 34
N/F BENJAMIN MOORE

LOT 40

MW-8

MW-6

MW-2

MW-4

GP-2

GP-1

GP-10

PZ-3

LOT 19
N/F CHEMICAL WASTE MANAGEMENT

LOT 31
N/F CHEMICAL WASTE MANAGEMENT

GRAPHIC SCALE



(IN FEET)
1 inch = 80 ft.

SYMBOL LEGEND

- Monitoring Well Location
- Geoprobe Location (Chemical Waste Site)
- Piezometer Location (Chemical Waste Site)
- Property Line
- Railroad
- Fence
- Water Table Elevation Contour Line
- Approximate Direction of Groundwater Flow

NOTES:

1. Hilton Davis samples collected January 2003, Chem Waste Management samples collected August 2002.

REFERENCE PLANS:

1. PLAN ENTITLED "Figure 1 Monitoring Well Location Map, Hilton-Davis ISRA Site, Newark, New Jersey." Prepared by PMC Environmental, Dated 08/30/01.

2. PLAN ENTITLED "Benzene Concentrations in Shallow Groundwater, CWM-NJM, Newark, New Jersey." Prepared by GeoTrans, Inc., Dated 10/22/02.

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WATER TABLE CONTOUR MAP

HILTON-DAVIS/CHEM WASTE MANAGEMENT

CITY OF NEWARK

ESSEX COUNTY, NEW JERSEY

FIGURE

4

933290008



PASSAIC RIVER

LOT 56
N/F HILTON DAVIS

MW-5
ND

MW-4
ND

MW-3
3.77

MW-1
ND

LOT 57
N/F DIAMOND SHAMROCK

LOT 34
N/F BENJAMIN MOORE

LOT 40

MW-8
0.812 µg/l

MW-6
137 µg/l

MW-2
523 µg/l

MW-4
17,000 µg/l

GP-1
3,000 µg/l

GP-2
8,600 µg/l

GP-10
400 µg/l

PZ-3

17,000 µg/l

SYMBOL LEGEND

Monitoring Well Location

Geoprobe Location (Chemical Waste Site)

Piezometer Location (Chemical Waste Site)

Property Line

Railroad

Fence

Water Table Elevation Contour Line

Approximate Direction of Groundwater Flow

GRAPHIC SCALE



(IN FEET)
1 inch = 80 ft.

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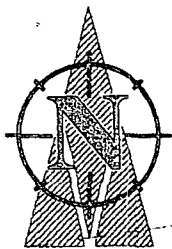
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Project No:
417-01-01

BENZENE CONCENTRATIONS
HILTON-DAVIS/CHEM WASTE MANAGEMENT
CITY OF NEWARK
ESSEX COUNTY, NEW JERSEY

FIGURE

5

933290009



PASSAIC RIVER

LOT 56
N/F HILTON DAVIS

MW-5
ND

MW-4
1.44 µg/l

MW-3
297 µg/l

MW-1
ND

LOT 57
N/F DIAMOND SHAMROCK

LOT 34
N/F BENJAMIN MOORE

LOT 40

MW-8
105 µg/l

MW-6
991 µg/l

MW-2
253 µg/l

MW-4
44,000 µg/l

GP-1
16,000 µg/l

GP-2
88,000 µg/l

GP-10
1,600 µg/l

PZ-3
110,000 µg/l

LOT 19
N/F CHEMICAL WASTE MANAGEMENT

LOT 31
N/F CHEMICAL WASTE MANAGEMENT

GRAPHIC SCALE



(IN FEET)
1 inch = 80 ft.

SYMBOL LEGEND

- Monitoring Well Location
- Geoprobe Location (Chemical Waste Site)
- Piezometer Location (Chemical Waste Site)

Property Line

Railroad

Fence

Water Table Elevation
Contour Line

Approximate Direction of
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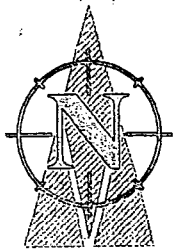
CHLOROBENZENE CONCENTRATIONS

HILTON-DAVIS/CHEM WASTE MANAGEMENT
CITY OF NEWARK
ESSEX COUNTY, NEW JERSEY

FIGURE

6

933290010



LOT 57
N/F DIAMOND SHAMROCK

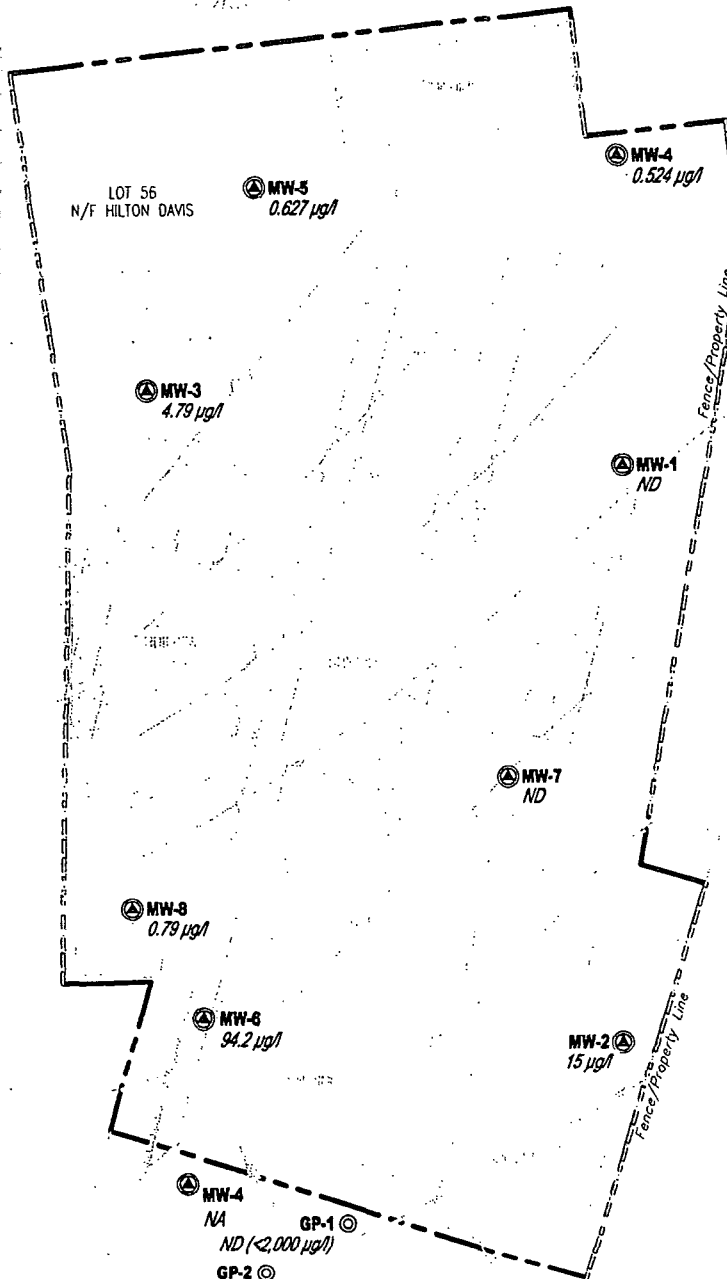
LOT 56
N/F HILTON DAVIS

LOT 34
N/F BENJAMIN MOORE

LOT 40

LOT 19
N/F CHEMICAL WASTE MANAGEMENT

LOT 31
N/F CHEMICAL WASTE MANAGEMENT



SYMBOL LEGEND

- Monitoring Well Location
- Geoprobe Location (Chemical Waste Site)
- Piezometer Location (Chemical Waste Site)

--- Property Line

--- Railroad

--- Fence

Water Table Elevation
Contour Line

Approximate Direction of
Groundwater Flow

GRAPHIC SCALE



(IN FEET)
1 inch = 80 ft.

NOTES:

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1,4-DICHLOROBENZENE CONCENTRATIONS

HILTON-DAVIS/CHEM WASTE MANAGEMENT

CITY OF NEWARK

ESSEX COUNTY, NEW JERSEY

FIGURE

7

933290011



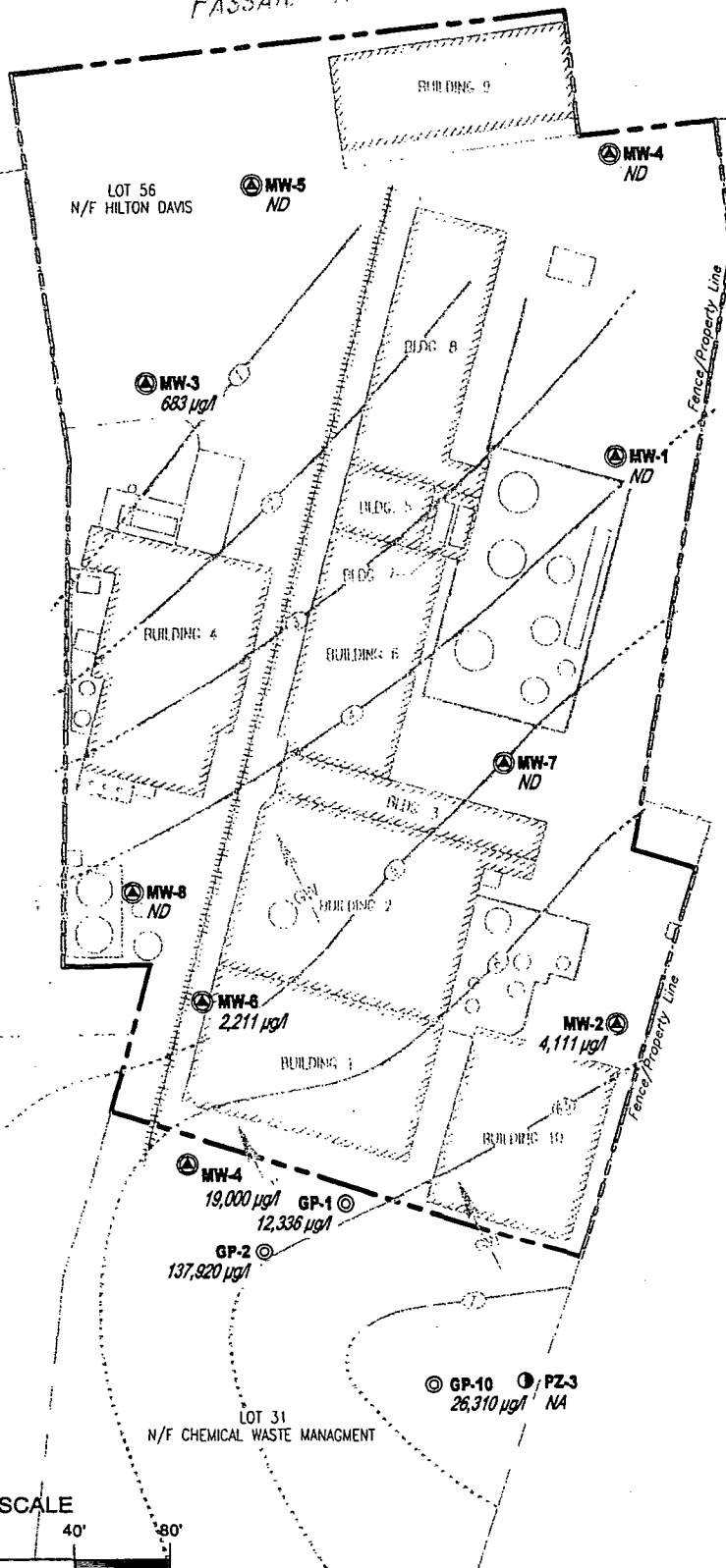
PASSAIC RIVER

LOT 57
N/F DIAMOND SHAMROCK

LOT 19
N/F CHEMICAL WASTE MANAGEMENT

LOT 34
N/F BENJAMIN MOORE

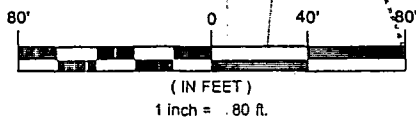
LOT 40



SYMBOL LEGEND

- Monitoring Well Location
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- Piezometer Location (Chemical Waste Site)
- Property Line
- Railroad
- Fence
- Water Table Elevation Contour Line
- Approximate Direction of Groundwater Flow

GRAPHIC SCALE



NOTES:

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SVOC TICS CONCENTRATIONS

HILTON-DAVIS/CHEM WASTE MANAGEMENT
CITY OF NEWARK
ESSEX COUNTY, NEW JERSEY

FIGURE

8

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